3.0 REVIEW OF DOMESTIC USE STATUS BY PESTICIDE

This section provides an overview of the domestic use both past and present of the Level I pesticides addressed in the BNS. The following areas are covered:

- Registration/Classification Status
- Manufacture and Distribution
- Product Use
- Product Components/Structure
- Product Import and Export

Table 3-1 is a summary of the uses, endpoints and pertinent human and environmental health criteria associated with the Level I pesticides. Section 3.1 through 3.5 provide further details by pesticide. Section 3.6 is a brief overview of global use and production of the Level I pesticides.

3.1 Aldrin and Dieldrin

Aldrin and dieldrin are similar compounds and were both used for crop protection from various soil dwelling pests as well as protection against termite infestation. Dieldrin is also a primary degradation product of aldrin.

3.1.1 Registration and Classification Status of Aldrin and Dieldrin

All pesticide uses of aldrin and dieldrin were canceled in 1974, except for subsurface ground insertion for termite control, dipping of nonfood roots and tops and moth-proofing by manufacturing processes in a closed system (USDHHS, 1993). Twenty one product registrations that remained for non-food crop uses of aldrin were allowed to lapse or were voluntarily canceled by the registrants. Most remaining aldrin products were canceled by 1987, with the last product canceled in 1991. Thirty product registrations that remained for non-food crop uses of dieldrin were allowed to lapse or were voluntarily canceled by the registrants. Most remaining dieldrin products were canceled by 1987; the last product was canceled in 1989.

Table 3-1. Pesticide Names, Descriptions, Uses, and Status

Pesticide and Product Names	Chemical Name and Description	Product Application	Human Health and Ecological Endpoints of Concern	U.S. Federal (EPA) and State Cancellation Dates	Federal WQS (1) and proposed SQC (2)	Great Lakes States/ Region WQC (3) and SQC
Aldrin -Aldrec -Aldrex -Drinex -Octalene -Seedrin -Compound 118 -Aldrite -Aldrosol -HHDN	1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexaydro-1,4:5,8-dimethanonaphthalalene (HHDN), $C_{12}H_8Cl_6$ White, tan, or dark brown crystalline solid. Insoluble in water, very soluble in most organic solvents	Insecticide (broad crop and forest cover) and termiticide	Human Health Probable carcinogen. Neurological and behavioral effects at lower doses. Indication of developmental and reproductive effects has been observed in chronic oral studies. Ecological Health Acute lethality to fish and birds. Decreased growth and biomass in plants. Indication of developmental and reproductive effects has been observed in chronic oral studies.	1974 - EPA canceled all food crop pesticide uses 1988 - Tolerances revoked 1991- All remaining pesticide uses canceled	WQS Human Health: 0.13 ng/L at 10^{-6} Risk Level Aquatic Life: Saltwater 1.3 µg/L Freshwater 3 µg/L SQC None Proposed	Great Lakes Initiative WQC Not applicable Ontario SQC NEL NA LEL 0.002 µg/kg SEL 8.4 $\mu g/kg_{oc}$

(1) WQS = Water Quality Standards
(2) SQC = Sediment Quality Criteria
(3) WQC = Water Quality Criteria

Table 3-1. Pesticide Names, Descriptions, Uses, and Status (Continued)

Pesticide and Product Names	Chemical Name and Description	Product Application	Human Health and Ecological Endpoints of Concern	U.S. Federal (EPA) and State Cancellation Dates	Federal WQS and proposed SQC	Great Lakes States/ Region WQC and SQC
Dieldrin -Shell Dieldrin 20 EC -Alvit -Dieldrix -Octalox -Quintex -Red Shield	3,4,5,6,9,9-Hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-2,7:3,6-dimethanonaphth[2,3-b]oxirene; 4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-endo,exo-1,4:5,8-dimethanonaphthalene HEOD; ENT 16225; Octalox. $C_{12}H_8Cl_6O$ Pale or tan crystalline solid, practically insoluble in water, moderately soluble in organic solvents	Insecticide (for corn, termite control, moth control on clothing and carpets)	Human Health Probable carcinogen. Associated with possible reproductive and developmental effects, neurological and behavioral symptoms, and effects to the immune and endocrine systems. Ecological Health Reproductive and developmental effects observed in amphibians. Behavioral and neurological symptoms observed in birds. Mortality observed in birds.	1974 - EPA canceled all food-crop pesticide uses 1988 - Tolerances revoked 1989 - All remaining pesticide uses canceled	SQC Human Health: 0.014 ng/L at 10^{-6} Risk Level Aquatic Life Saltwater 1.9 µg/L Freshwater 1.9 µg/L SQC (Proposed) Freshwater 11 $\mu g/g_{oc}$ Saltwater 20 $\mu g/g_{oc}$	Great Lakes Initiative WQC Human Health Carcinogenic 0.006 ng/L Non-carcinogenic 0.41 ng/L Aquatic Life Acute 240 ng/L Chronic 56 ng/L Ontario SQC NEL NA LEL 0.002 µg/kg SEL 91 $\mu g/kg_{oc}$

Table 3-1. Pesticide Names, Descriptions, Uses, and Status (Continued)

Pesticide and Product Names	Chemical Name and Description	Product Application	Human Health and Ecological Endpoints of Concern	U.S. Federal (EPA) and State Cancellation Dates	Federal WQS and proposed SQC	Great Lakes States/ Region WQC and SQC
Chlordane -Chlordane 8E Emulsifiable Concentrate -Chlordane C-100 -Sanex Chlordane 8E EC -Chloro 2 -Vigoro Ant and Grub Killer -Sanex Ant and Grub Killer -Green Cross Ant Trap -Chlordan -Velsicol 1068 -Octachlor	1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-4,7-methano-1H-indene; 1,2,4,5,6,7,8,8a-octachlore-3a,4,7,7a-tetrahydro-4,7-methanindan; CD-68 Viscous amber- colored liquid, insoluble in water, miscible with aliphatic and aromatic hydrocarbon solvents	Insecticide (for control of termites, and fruit and vegetable pests)	Human Health Probable carcinogen. Reproductive and developmental effects as well as neurological and behavioral symptoms. Disruption of the immune and endocrine systems has been noted. Possible association with liver toxicity. Ecological Health Acute lethality in aquatic systems. Reproductive and developmental effects observed with terrestrial, aquatic, and avian species. Effects on growth and biomass associated with invertebrates and mammals.	1978 - All use of chlordane on food crops canceled. 1988 - All sales and commercial use stopped.	WQS Human Health: 0.57 ng/L at 10^{-6} Risk Level Aquatic Life Freshwater 4.3 ng/L Saltwater 4 ng/L SQC (Proposed) None Proposed	Great Lakes Initiative WQC Human Health Carcinogenic 0.25 ng/L Non-carcinogenic 1.4 ng/L Aquatic Life Acute NA Chronic NA Ontario SQC NEL 0.005 µg/kg LEL 0.007 µg/kg SEL 5.9 µg/kg_{oc}

Table 3-1. Pesticide Names, Descriptions, Uses, and Status (Continued)

Pesticide and Product Names	Chemical Name and Description	Product Application	Human Health and Ecological Endpoints of Concern	U.S. Federal (EPA) and State Cancellation Dates	Federal WQS and proposed SQC	Great Lakes States/ Region WQC and SQC
DDT -Poulins Bat ad Mouse Doom Powder -DDT %5 Pink Tracking Powder Rodenticide -DDT 50D Dust Concentrate -Sanex Rodentrak -Genitox -Anofex -Detoxan -Pentachlorin -Dicophane -Chlorophenothane -Rothane (DDD) -Dilene (DDD)	1,1'-(2,2,2-Trichloroethylidene)bis[4-chlorobenzene]; 1,1,1-trichloro-2,2-bis9pichlorophenyl)ethane; *p,p'*-DDT Colorless crystals, white powder, or biaxial elongated tablets, practically insoluble in water	Insecticide (broad crop cover)	<u>Human Health</u> Probable carcinogen. Reproductive and developmental effects as well as neurological and behavioral symptoms. Disruption of the immune and endocrine systems has been noted. Possible association with liver toxicity. <u>Ecological Health</u> Reproductive and developmental effects observed in fish, mammals, birds and invertebrates. Neurological and behavioral symptoms also reported in aquatic and avian species. Effects on metabolism, immune system and growth may also occur with some species.	1972 - EPA canceled all crop production and non-health uses 1986 Food tolerances revoked	<u>WQS</u> Human Health: 0.59 ng/L at 10^{-6} Risk Level Aquatic Life Freshwater 1 ng/L Saltwater 1 ng/L <u>SQC (Proposed)</u> None Proposed	<u>Great Lakes Initiative WQC</u> Human Health Carcinogenic 0.15 ng/L Non-carcinogenic 2 ng/L Aquatic Life Acute NA Chronic NA Wildlife 0.011 ng/L <u>Ontario SQC</u> NEL NA LEL 0.007 µg/kg SEL 11.8 µg/kg_{oc}

Table 3-1. Pesticide Names, Descriptions, Uses, and Status (Continued)

Pesticide and Product Names	Chemical Name and Description	Product Application	Human Health and Ecological Endpoints of Concern	U.S. Federal (EPA) and State Cancellation Dates	Federal WQS and proposed SQC	Great Lakes States/ Region WQC and SQC
Mirex -Dechlorane -CG-1283 -HRS 1276b ENT 25719	1,1a,2,2,3,3a,4,5,5,5a,5b,6-dodecachlorooctahdro-1,3,4-metheno-1H-cyclobuta[cd]pentalene; $C_{10}Cl_{12}$ snow-white, odorless crystalline solid, practically insoluble in water	-Flame retardant (main use; for plastics, rubber paint, paper, electrical goods) -Insecticide (for control of fire ants)	Human Health Probable carcinogen. Possible developmental and reproductive effects. Possible impacts to endocrine system. Ecological Health Asociated with reproductive and developmental effects and decreased growth.	1971 - All pesticide uses canceled by EPA	WQS Human Health: NA Aquatic Life NA SQC (Proposed) None Proposed	Great Lakes Initiative WQC Human Health Carcinogenic NA Non-carcinogenic NA Aquatic Life Acute NA Chronic NA Ontario SQC NEL NA LEL 0.007 µg/kg SEL 128 $\mu g/kg_{oc}$

Table 3-1. Pesticide Names, Descriptions, Uses, and Status (Continued)

Pesticide and Product Names	Chemical Name and Description	Product Application	Human Health and Ecological Endpoints of Concern	U.S. Federal (EPA) and State Cancellation Dates	Federal WQS and proposed SQC	Great Lakes States/ Region WQC and SQC
Toxaphene -Agricide Maggot Killer -Alltox -Camphofene Huilex Geniphene -Hercules 3956 -Hercules Toxaphene -Motox -Penphene -Phenicide -Phenetox -Strobane-T -Synthetic 3956 -Toxakil	Chlorinated camphene; camphechlor; polychlorocamphene; at least 177 C10 polycloro derivatives having an approx. overall empirical formula of $C_{10}H_{10}Cl_8$; 67-69% chlorine content by weight yellow waxy solid, practically insoluble in water, freely soluble in aromatic hydrocarbons	Insecticide (for use on fruits, vegetables, corn, grain, cotton; for control of ecto-parasites)	Human Health Probable carcinogen. Reproductive and developmental effects as well as neurological and behavioral symptoms. Disruption of the immune and endocrine systems has been noted. Possible association with liver toxicity and carciovascular effects. Ecological Health Asociated with reproductive and developmental effects and decreased growth. Also associated with possible neurological and behavioral symptoms.	1982 - All pesticide uses canceled by EPA	WQS Human Health: 0.73 at 10^{-6} Risk Level Aquatic Life Freshwater 2 ng/L Saltwater 2 ng/L SQC (Proposed) None Proposed	Great Lakes Initiative WQC Human Health Carcinogenic 0.068 Non-carcinogenic NA Aquatic Life Acute NA Chronic NA Ontario SQC NEL NA LEL NA SEL NA